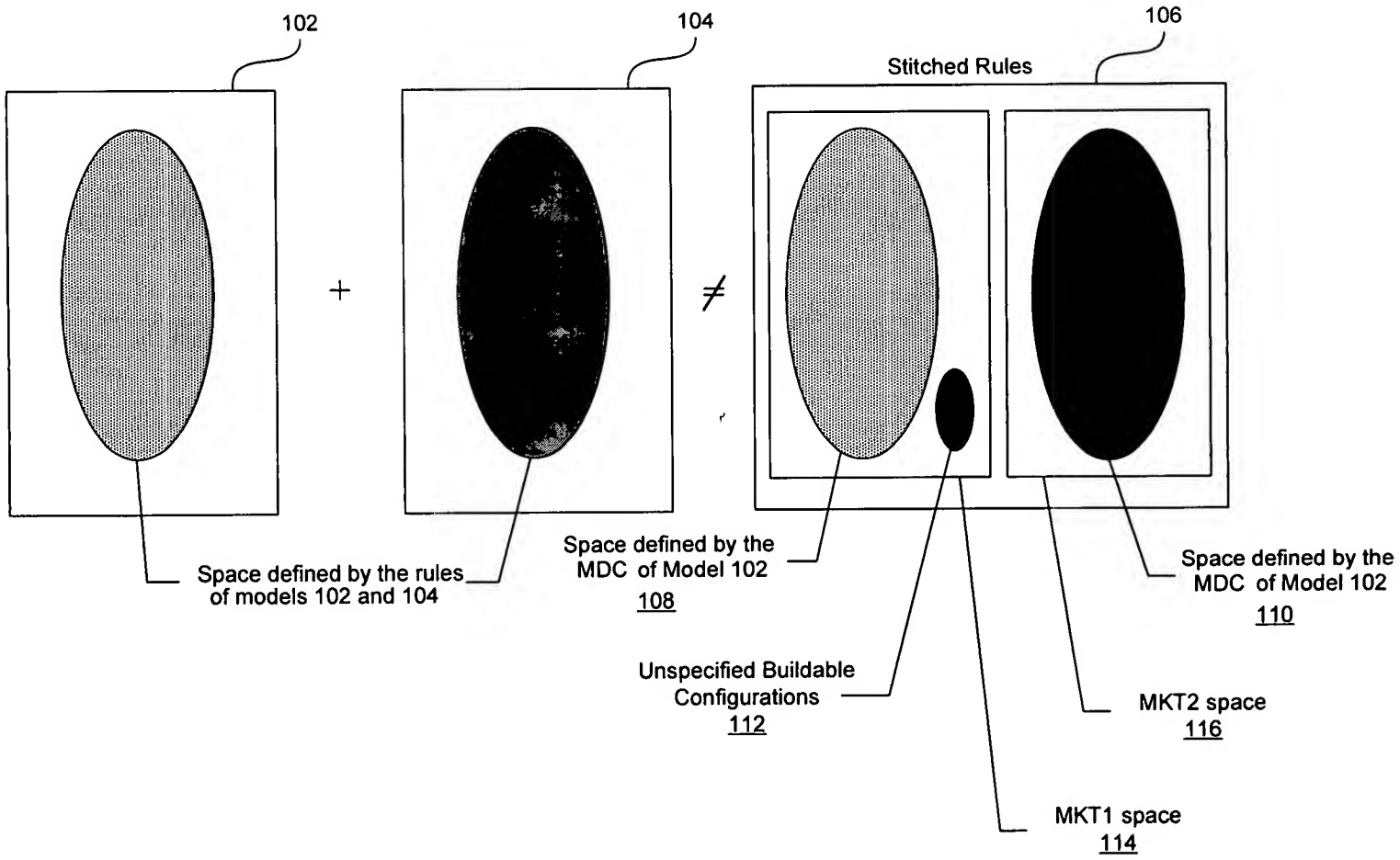

Figure 1 (prior art)

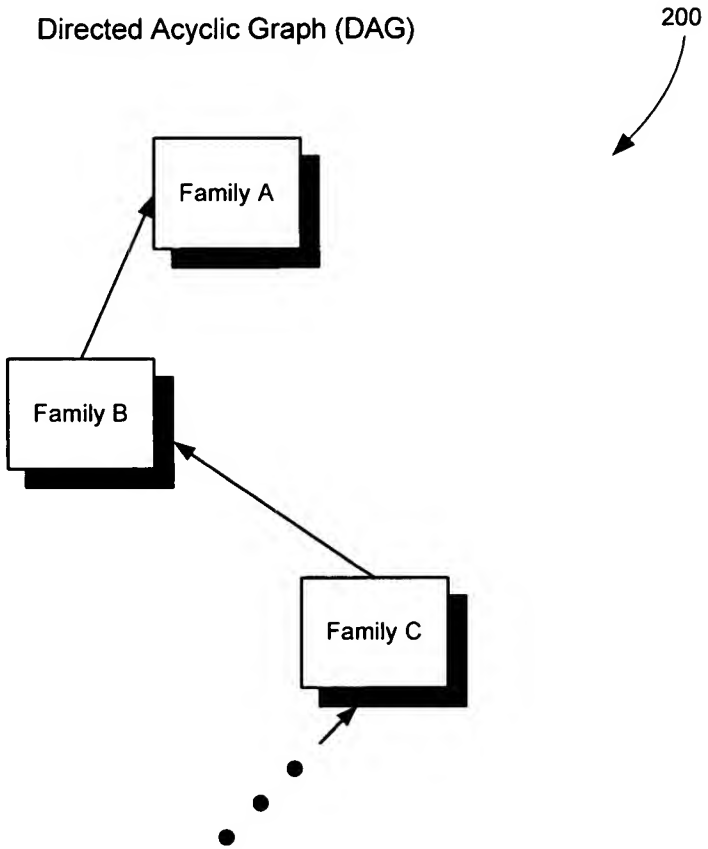

Figure 2

DAG for models 602 and 612

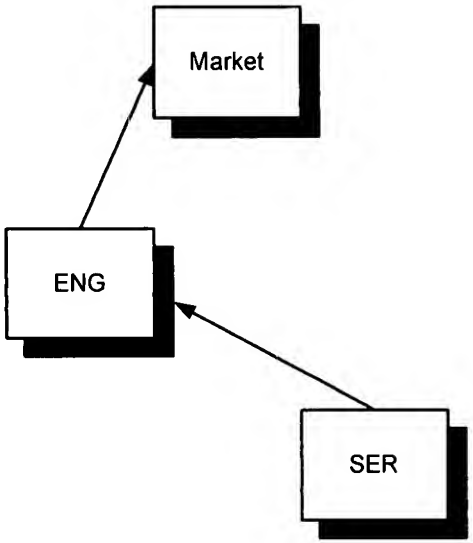

Figure 3 (prior art)

DAG for model 622

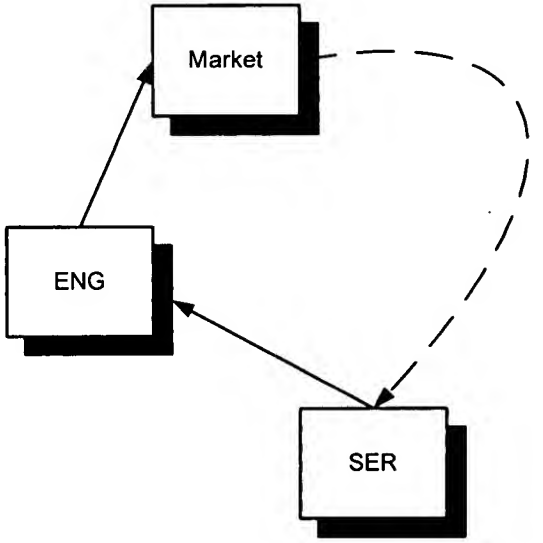

Figure 4 (prior art)

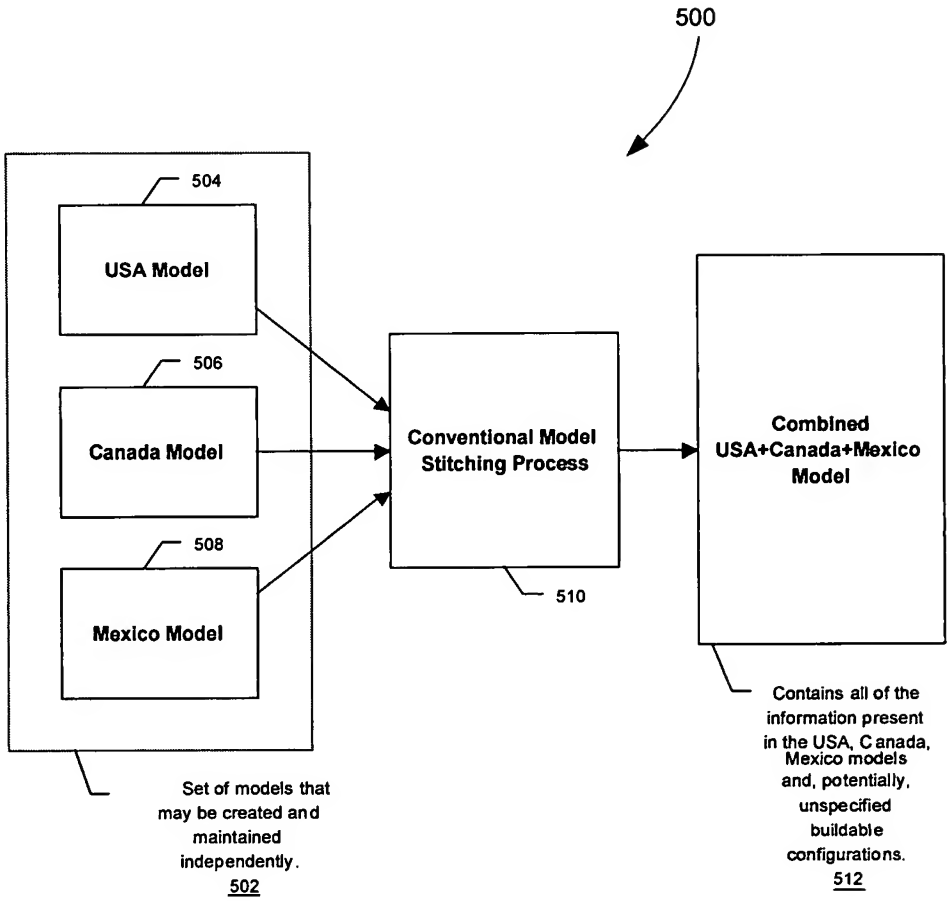

Figure 5 (Prior Art)

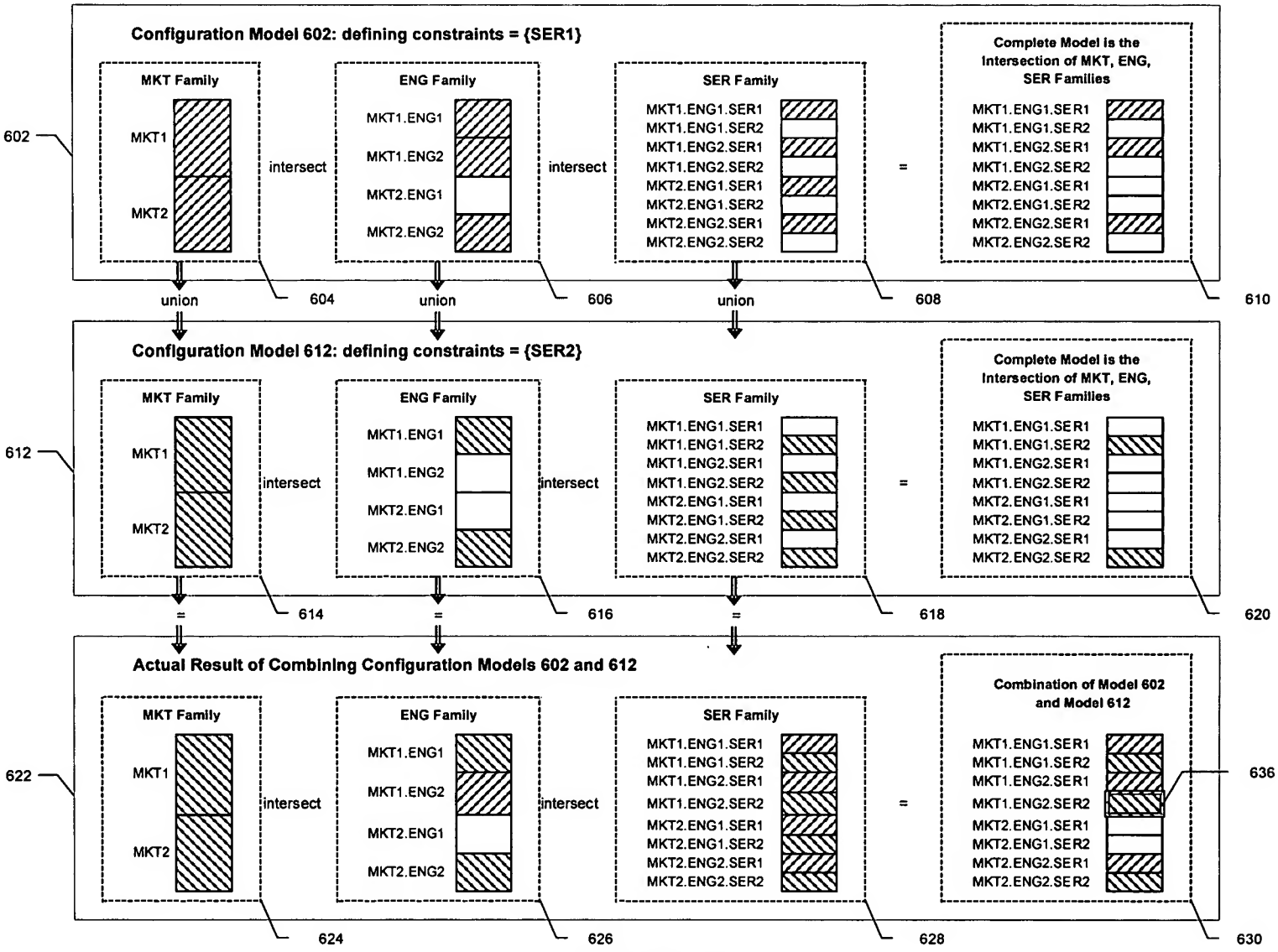

Figure 6 (Prior Art)

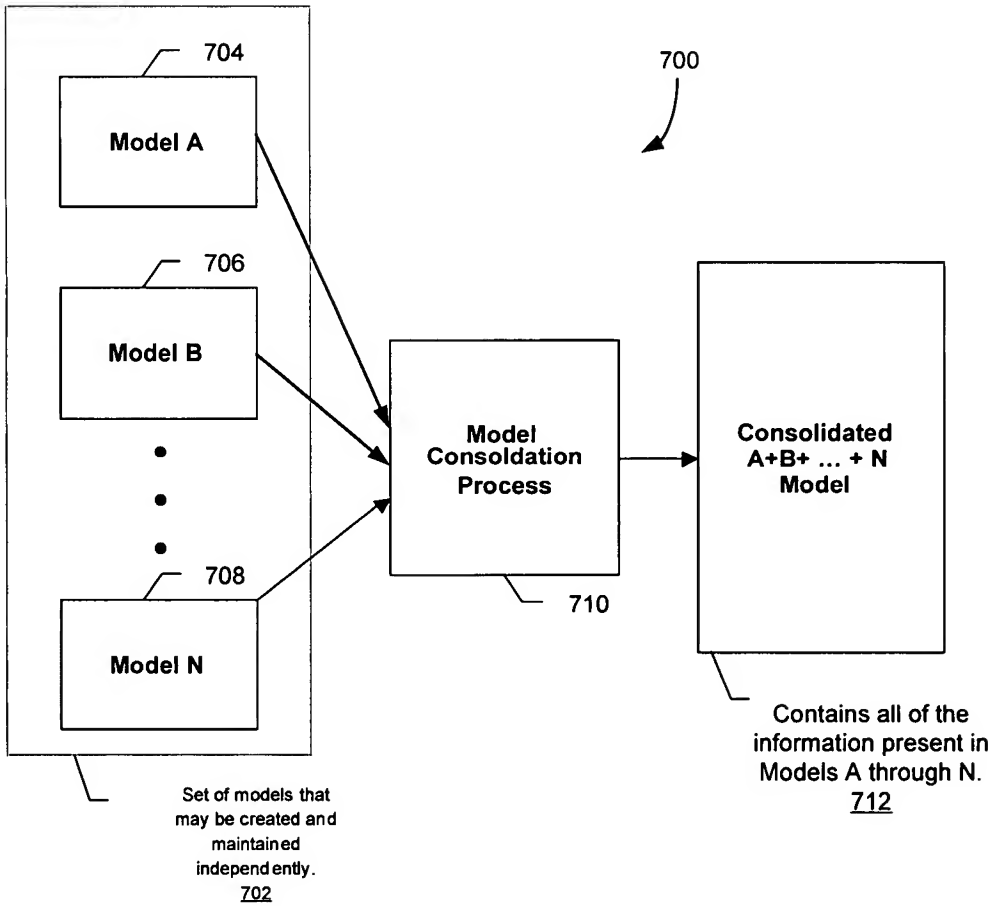
704
Model A
706
Model B
708
Model N
Set of models that may be created and maintained independently.
702
700
Model Consoldation Process
710
Consolidated A+B+ ... + N Model
Contains all of the information present in Models A through N.
712

Figure 7

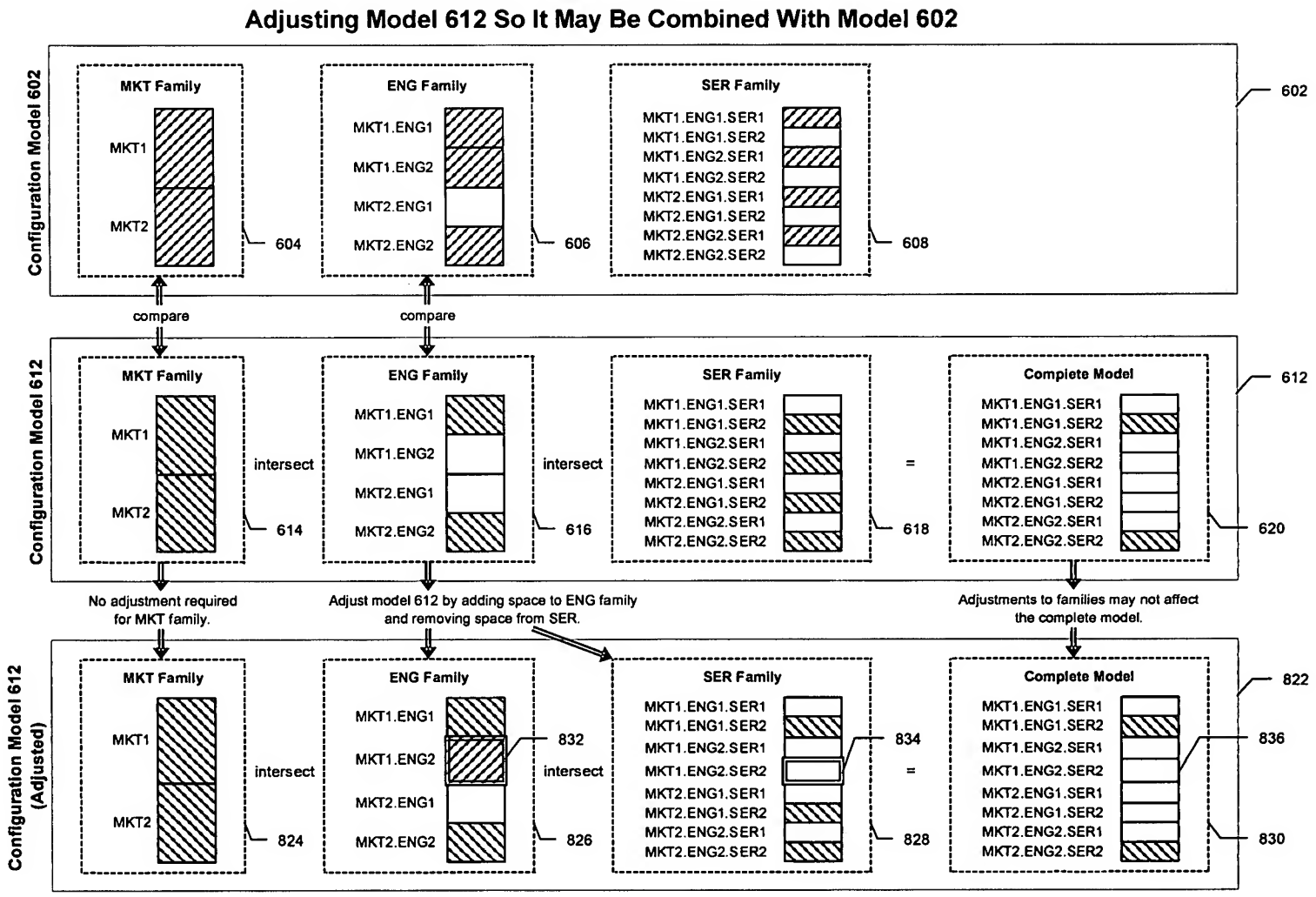
Adjusting Model 612 So It May Be Combined With Model 602
Configuration Model 602
MKT Family
MKT1
MKT2
604
ENG Family
MKT1.ENG1
MKT1.ENG2
MKT2.ENG1
MKT2.ENG2
606
SER Family
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
608
602
compare
compare
Configuration Model 612
MKT Family
MKT1
MKT2
intersect
614
ENG Family
MKT1.ENG1
MKT1.ENG2
MKT2.ENG1
MKT2.ENG2
intersect
616
SER Family
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
=
618
Complete Model
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
620
612
No adjustment required for MKT family.
Adjust model 612 by adding space to ENG family and removing space from SER.
Adjustments to families may not affect the complete model.
Configuration Model 612 (Adjusted)
MKT Family
MKT1
MKT2
intersect
824
ENG Family
MKT1.ENG1
MKT1.ENG2
MKT2.ENG1
MKT2.ENG2
832
intersect
826
SER Family
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
834
=
828
Complete Model
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
836
830
822

Figure 8

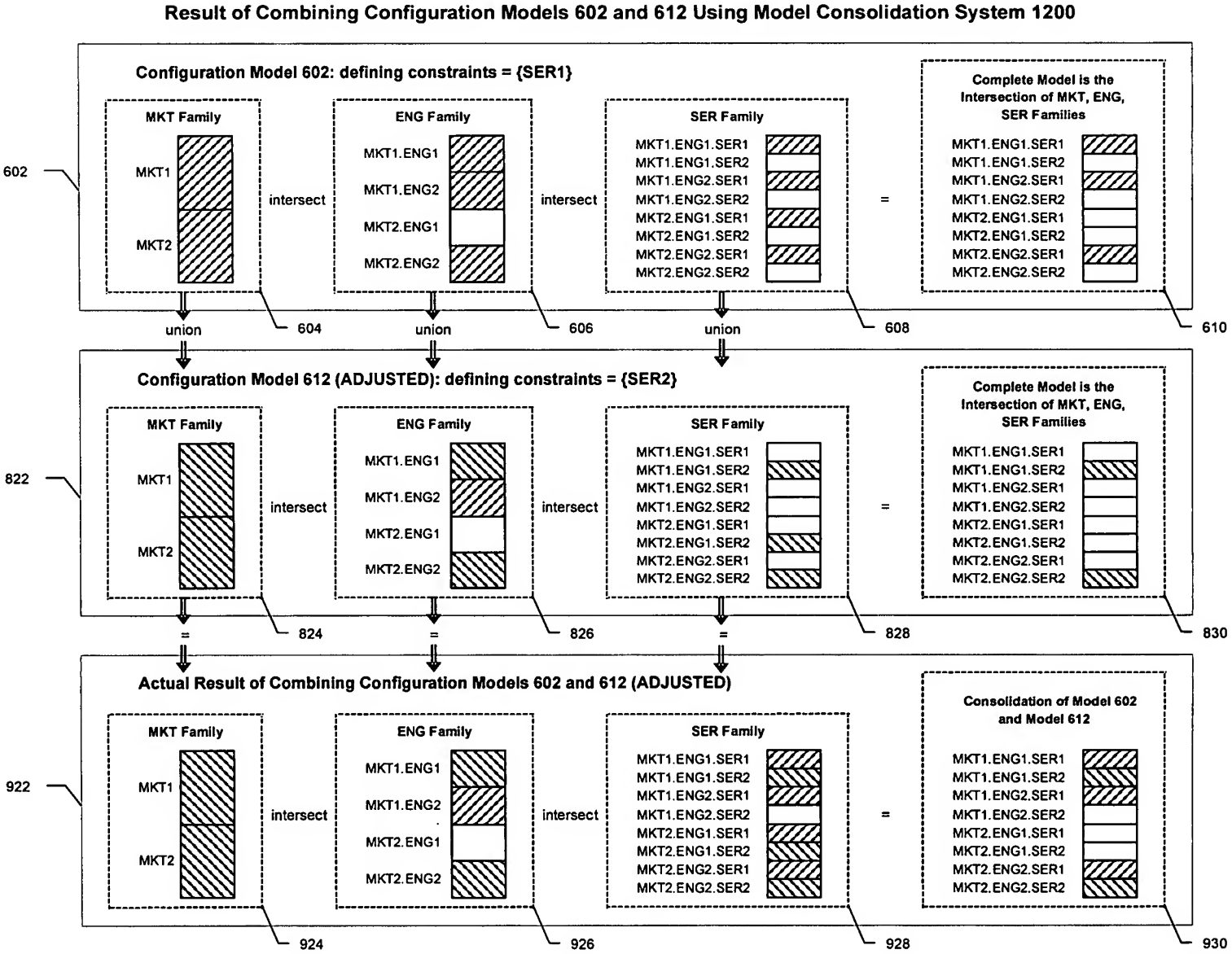
Result of Combining Configuration Models 602 and 612 Using Model Consolidation System 1200
Configuration Model 602: defining constraints = {SER1}
602
MKT Family
MKT1
MKT2
intersect
ENG Family
MKT1.ENG1
MKT1.ENG2
MKT2.ENG1
MKT2.ENG2
intersect
SER Family
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
=
Complete Model is the Intersection of MKT, ENG, SER Families
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
union
604
union
606
union
608
610
Configuration Model 612 (ADJUSTED): defining constraints = {SER2}
822
MKT Family
MKT1
MKT2
intersect
ENG Family
MKT1.ENG1
MKT1.ENG2
MKT2.ENG1
MKT2.ENG2
intersect
SER Family
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
=
Complete Model is the Intersection of MKT, ENG, SER Families
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
=
824
=
826
=
828
830
Actual Result of Combining Configuration Models 602 and 612 (ADJUSTED)
922
MKT Family
MKT1
MKT2
intersect
ENG Family
MKT1.ENG1
MKT1.ENG2
MKT2.ENG1
MKT2.ENG2
intersect
SER Family
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
=
Consolidation of Model 602 and Model 612
MKT1.ENG1.SER1
MKT1.ENG1.SER2
MKT1.ENG2.SER1
MKT1.ENG2.SER2
MKT2.ENG1.SER1
MKT2.ENG1.SER2
MKT2.ENG2.SER1
MKT2.ENG2.SER2
924
926
928
930

Figure 9A

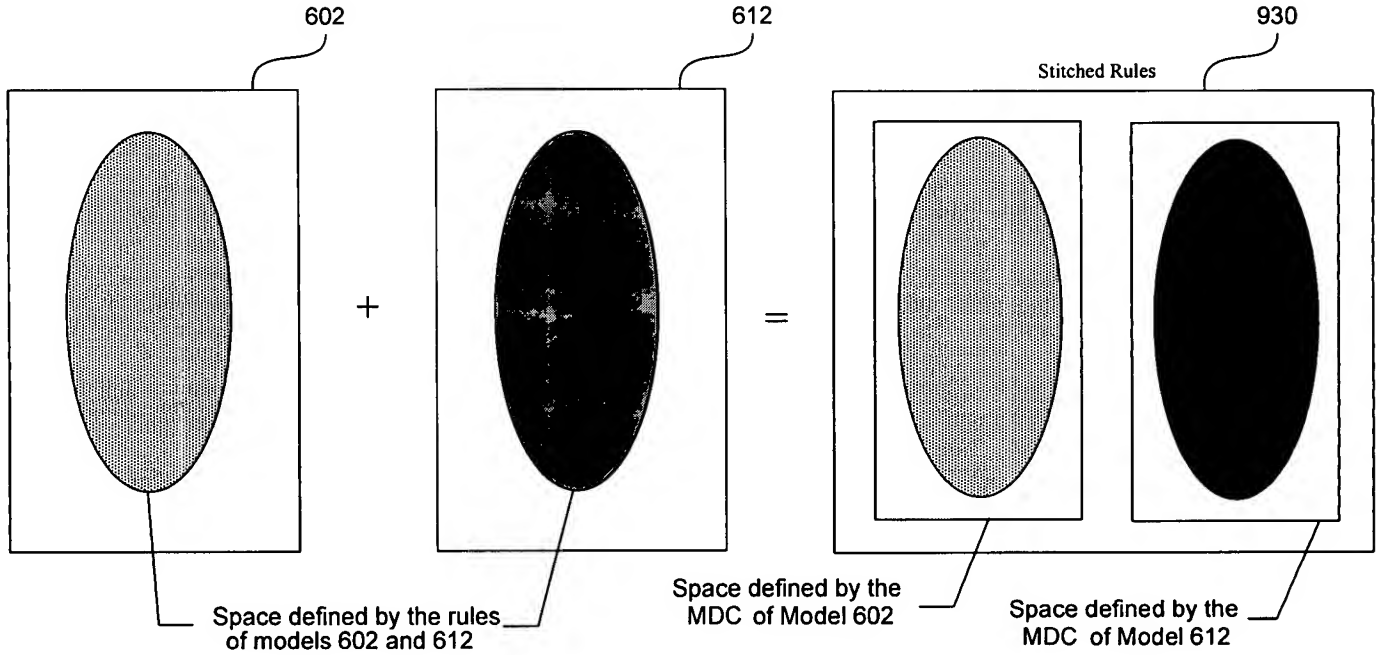
602
612
930
Stitched Rules
+
=
Space defined by the rules of models 602 and 612
Space defined by the MDC of Model 602
Space defined by the MDC of Model 612

Figure 9B

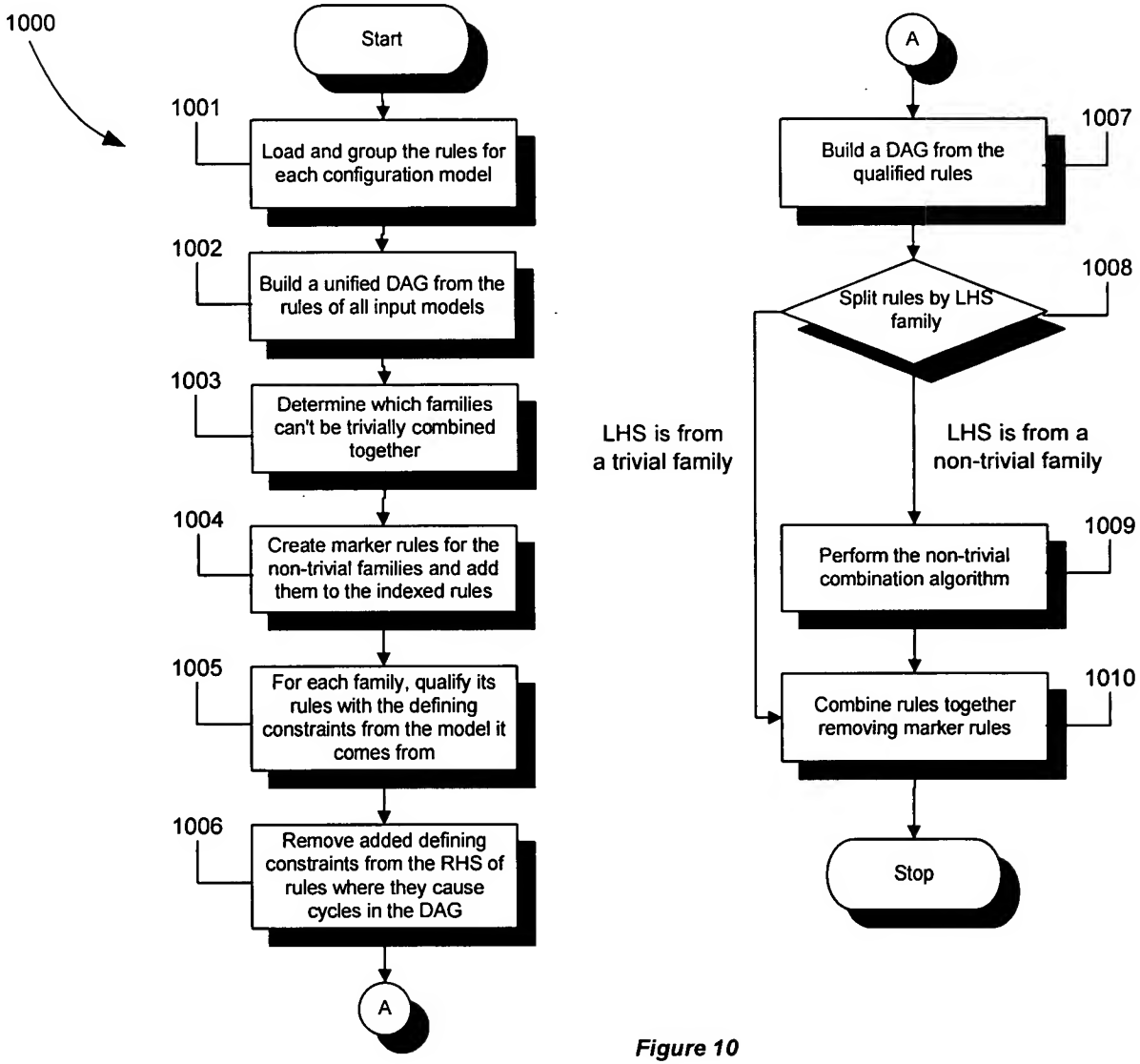
1000
Start
1001
Load and group the rules for each configuration model
1002
Build a unified DAG from the rules of all input models
1003
Determine which families can't be trivially combined together
1004
Create marker rules for the non-trivial families and add them to the indexed rules
1005
For each family, qualify its rules with the defining constraints from the model it comes from
1006
Remove added defining constraints from the RHS of rules where they cause cycles in the DAG
A
A
1007
Build a DAG from the qualified rules
1008
Split rules by LHS family
LHS is from a trivial family
LHS is from a non-trivial family
1009
Perform the non-trivial combination algorithm
1010
Combine rules together removing marker rules
Stop

Figure 10

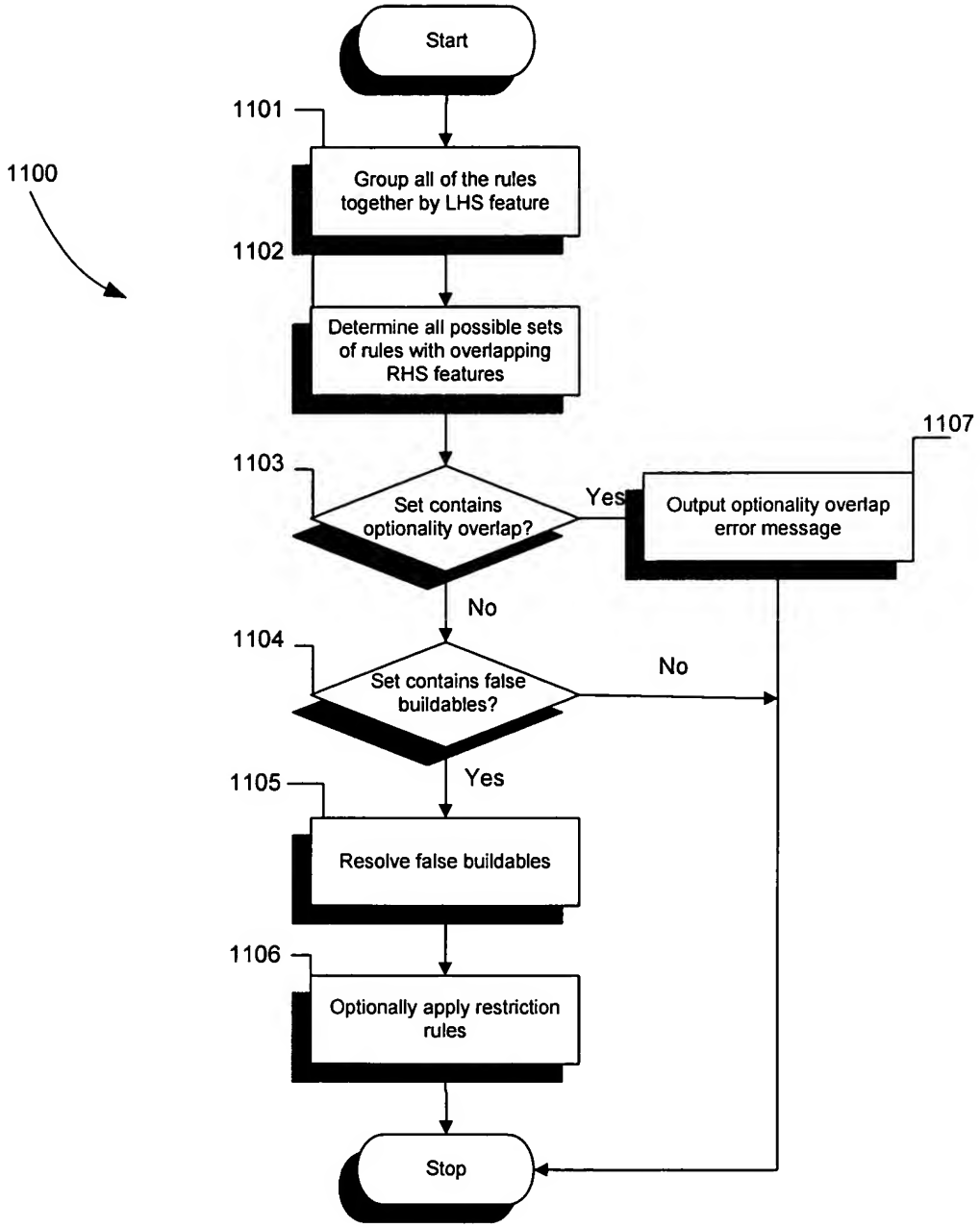
1100
Start
1101
Group all of the rules together by LHS feature
1102
Determine all possible sets of rules with overlapping RHS features
1103
Set contains optionality overlap?
Yes
1107
Output optionality overlap error message
No
1104
Set contains false buildables?
No
Yes
1105
Resolve false buildables
1106
Optionally apply restriction rules
Stop

Figure 11

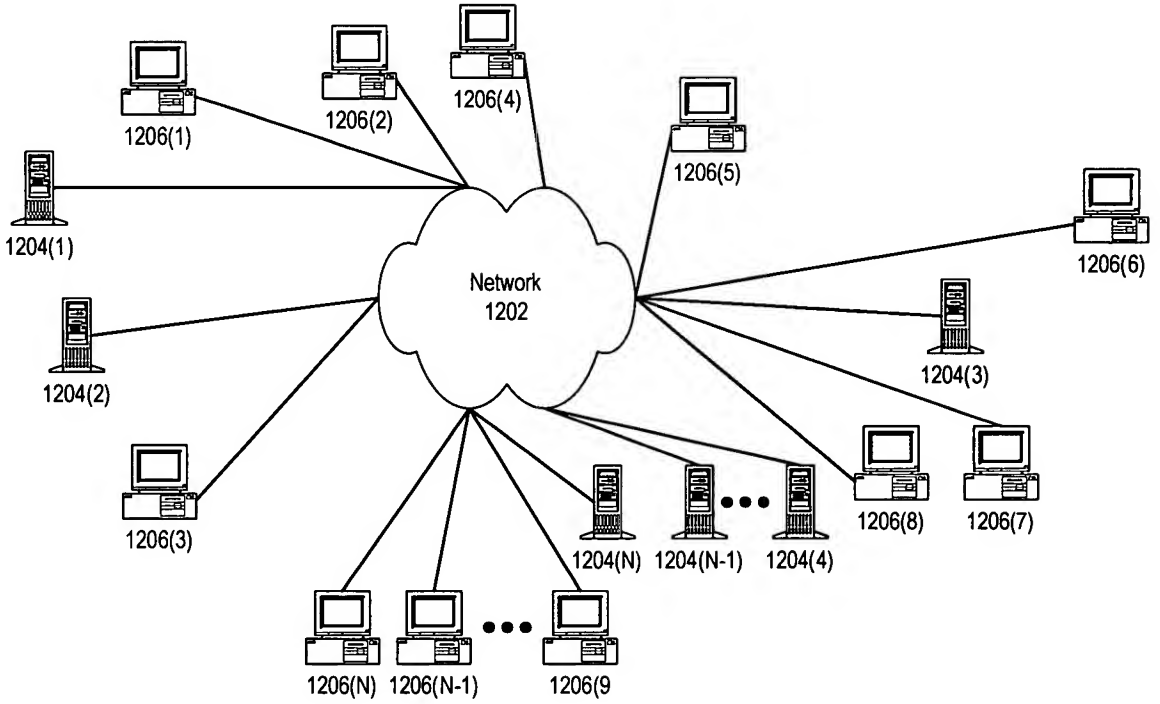
1206(1)
1206(2)
1206(4)
1206(5)
1206(6)
1204(1)
Network
1202
1204(2)
1204(3)
1206(3)
1206(8)
1206(7)
1204(N)
1204(N-1)
1204(4)
1206(N)
1206(N-1)
1206(9

Figure 12

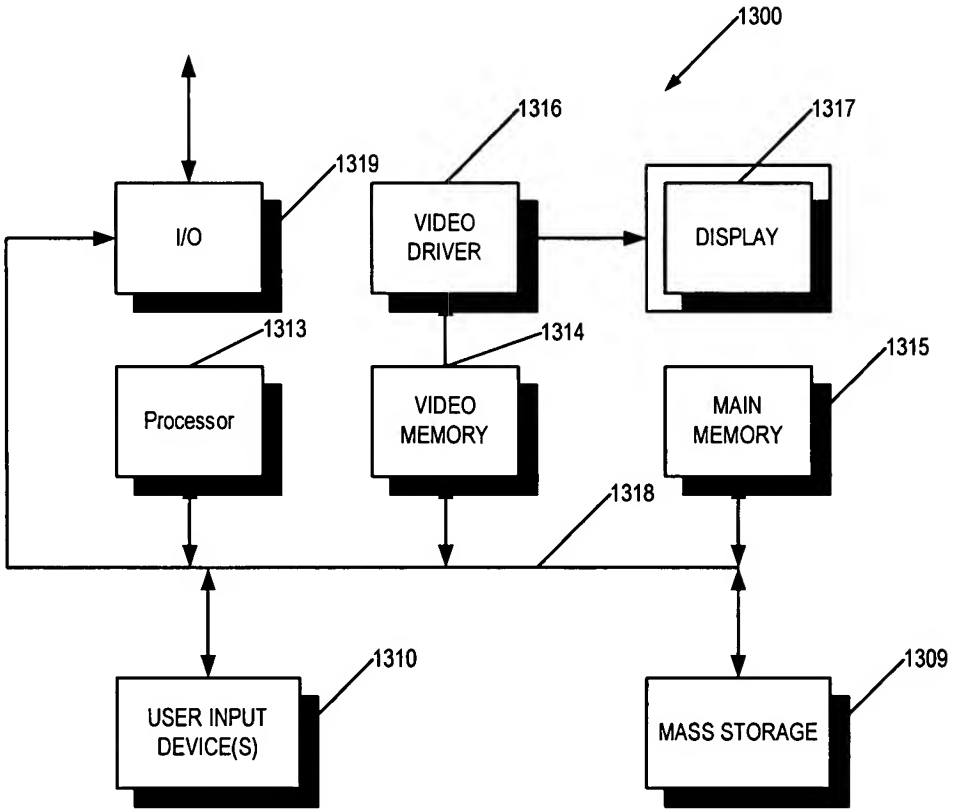
1300
1316
1317
1319
I/O
VIDEO DRIVER
DISPLAY
1313
1314
1315
Processor
VIDEO MEMORY
MAIN MEMORY
1318
1310
1309
USER INPUT DEVICE(S)
MASS STORAGE

Figure 13